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ABSTRACT

A study to determine the effectiveness of a comprehensive health education curriculum developed for Head Start, "Hale and Hardy's Helpful Health Hints," shows that the program appears to favorably affect the health knowledge of the children in the sample, and that the picture identification instrument format is appropriate for the preschool child. Seventy-three experimental subjects and 35 control subjects, all 4- and 5-year olds from two Kentucky Head Start centers, were given a modified version of the testing instrument used in the Longitudinal Study of the Primary Grades Health Curriculum Project. The pretest/posttest consisted of 30 statements; after each one was read, the child was shown 3 pictures and asked to point to the one that corresponded to the given statement. Those children exposed to the health curriculum scored significantly higher in health knowledge acquired. A need for replication of the study in other locations is indicated. (DG)

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DETERMINATION OF HEALTH KNOWLEDGE: A DESIGN FOR PRESCHOOL

Historically, preventive medicine has been considered to be less expensive than curative medicine, and health education is a major part of preventive medicine. In our search to promote prevention through public awareness and education, many new programs and ideas have developed. A major component of these new programs has been evaluation, and this becomes even more critical as government monies are cut and programs are reviewed for cost effectiveness.

Health education during early childhood is important because of the values and behaviors that are formed in these first few years (Calhoun, Grotberg and Rackley, 1980). Preschool education programs, such as Head Start, present a perfect opportunity to begin education of children and promotion of healthy lifestyles. These programs, however, must be carefully monitored and evaluated for effectiveness, not only in regard to health education, but also in all educational and developmental areas (Lazar and Darlington, 1979).

Lazar and Darlington (1979) summarized the findings of several longitudinal studies on children of low income families who participated in experimental preschool intervention programs since 1965. The initial data of twelve select studies were pooled to design a common follow-up study. Findings of this consortium indicated that Head Start apparently had lasting effects in the areas of (1) assignment to special education, (2) retention in grade, (3) achievement test scores, (4) intelligence test scores, and (5) attitudes and values. The specific type of intervention program did not have a significant influence on overall effectiveness.

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Health education is a requirement for a total Head Start program, however, a search of the literature revealed only three comprehensive health education curricula, all of which were outdated, unavailable for use, and/or inappropriate for general preschool use (Mann, Harrell and Hurt,1977). Several health curricula have been recently developed in selected topic areas, but no current comprehensive curriculum was found. (Mann, et al, 1977; Beyer and Solleder, 1982).

Based on this need, the development and evaluation of a comprehensive health education curriculum was included as part of the federal Health Education/Risk Reduction grant awarded to the Barren River District Health Department, Bowling Green, Kentucky, in 1980. The preschool curriculum Hale and Hardy's Helpful Health Hints (1982) is the result of this two-year project. The subsequent evaluation was a major consideration through the curriculum development. A thorough search of related literature revealed the only major evaluation project to be Zamoff and associates' evaluation of a 1971 curriculum entitled Healthy, That's Me (Zamoff and Regan, 1972; Zamoff, etal., 1973). This need for evaluation was further strengthened by McDavid (The Evaluation, 1968). The study presented in this article focuses primarily on evaluation of the children's knowledge, although all aspects of the curriculum are being evaluated.

The Conceptual Guidelines for School Health Programs in Pennsylvania (1967) stated that program evaluation should include the areas of content, objectives, pupil learning activities, and the evaluation process itself. The content of health education curricula needs to be constantly evaluated to determine its current status and to include new development and resources. Instructional objectives should clearly state the type of expected behavior and the criteria for evaluation. Pupil learning activities must be congruent

with the stated objectives and should be considered as they (1) are appropriate to the emotional and developmental level of the pupil, (2) facilitate multiple application of the senses, (3) provide for integrated experiences, (4) permit individual differences of the students, and (5) provide opportunity for observation of behaviors stated in the objectives.

The guidelines further state that the researchers must evaluate the instruments and methods used in the evaluation process to determine reliability and validity, congruency with stated objectives, opportunity for multiple evaluation procedures, purpose, performance with uniformity, and performance for specific purposes. External evaluation is needed to seek information regarding the program, the teachers, and other persons who could be seeing or experiencing the health program (Conceptual Guidelines, 1967).

In reviewing evaluation designed for all educational areas of Head Start, several methods were noted. The general direction of Head Start evaluation is toward direct observation procedures due to the inappropriateness of written exams (McDavid, Problems of Educational Evaluation, 1968), although parent/teacher interviews are also utilized (Mann, et al, 1977). The study presented in this article relied on a different approach. The health knowledge of the children was determined through use of a question/response instrument which allowed measurement of specific cognitive changes.

EVALUATION DESIGNS IN HEAD START

The design of this study was based on several related studies. A 1967-1968 study supported comparisons between different educational approaches rather than covariational or regressional techniques (Datta, 1969) The value of comparison groups was further documented in a 1969 study (A Comparative Study, 1969).

The Head Start Research and Evaluation Office listed four steps for evaluation design. These steps were (1) describe the population, (2) be familiar with varieties of possible intervention programs, (3) determine which program elements are associated with certain population characteristics, and (4) evaluate specific hypotheses (McDavid, Problems of Education Evaluation, 1968).

McDavid (Problems of Educational Evaluation, 1968) investigated the problems of sampling design and control groups in measuring the impact of Head Start programs on children. He characterized evaluation problems into four elements: conceptual, methodology, logistic differences, and interpretation of data. The steps which evolved from this form a sound basis for evaluation design. The steps are as follows:

1. formulate the research questions;
2. select a sample which can be observed according to specified criteria;
3. make all observations according to carefully specified procedures; and,
4. quantify observations to permit statistical analysis.

McDavid further recommended use of standardized tests for evaluation, both for economic reasons and to facilitate integration with other research projects.

Ball (1971) noted three problems in assessing attitudes of young children and offered techniques to help overcome these difficulties. First, there is little stability in children's attitudes; any insignificant experience can change it. However, the use of a control group can reduce the error. A second problem is that young children lack test-taking skills. If a pen and paper or verbal examination is used, it should be administered individually to the children. The final problem is that young children are eager to please

adults and will try to answer according to what they think the adult wants. Also, the children may answer all questions with the same response, such as yes or no. A well-constructed test administered by a skilled interviewer should alleviate this problem. Ball suggested picture usages as a possible method in assessing the attitudes of four and five year old children. Picture usage has been evaluated regarding measurement of health knowledge of first grade children (Solleder, 1979) and also with preschool children (Jubb, 1982).

Alpern and Levitt (1967) emphasized the use of a control group or pretest to reduce sampling error. Other potential problems noted were the Hawthorn Effect, inappropriate instrumentation, investigator bias, and data dissemination.

THE CURRICULUM

The curriculum evaluated in this study was Hale and Hardy's Helpful Health Hints, a comprehensive health education curriculum developed for Head Start (1982). Designed for integration into a total preschool program, it was implemented in the High Street Head Start Center, Bowling Green, Kentucky, for initial use. The teachers were trained during a one-day workshop and were carefully monitored throughout the year to insure proper implementation. Not only did the program director assist and observe the teachers in their use of the curriculum, but also the researcher observed each classroom teacher for two separate days during the school year.

THE EVALUATION DESIGN

Sampling

The High Street Head Start Center was selected as the experimental group based on its large enrollment, homogeneity of the sample population with

other Head Start populations, and receptiveness of the teachers to new ideas. All four and five year old children enrolled at the center were exposed to the curriculum for a total of 120 subjects. The Russellville Head Start Center, Russellville, Kentucky, was selected for the control group for a total of 40 children. Both centers functioned under direction of the Southern Kentucky Head Start Program, thus minimizing differences in enrollment eligibility, staff training, teaching methods, class size, and overall learning environment. The community of Russellville, although smaller than Bowling Green, was similar in socio-economic factors. Also, the two cities are 30 miles apart, thereby preventing interaction between the two groups.

Instrumentation

The health knowledge of the Head Start children was determined through modified use of the testing instrument used in the Longitudinal Study of the Primary Grades Health Curriculum Project. The original instrument was prepared by Richard L. Andrews, Ph.D., for the American Lung Association specifically to measure the cognitive and affective impact of the Project. The instrument was selected for this study based on content and the advantages of using a standardized instrument; however, only Booklet I, which measured cognitive development, was utilized. This section consisted of 30 items, each with three possible responses. Since a few questions were slightly modified to meet the content areas of this study and the sample population was a lower age group than the sample considered in the norms, no comparison was made between the results of this study and the national norms. However, every effort was made to maintain validity and reliability of the instrument. All test administrators were trained in correct usage of the test instrument and were observed by the researcher during the first two testing sessions. The instrument was piloted in a local day care center

to determine ease of administration and ability of young children to respond appropriately to the items. An item analysis of the Head Start pretest data was performed to determine reliability of the instrument for this population prior to continuation of the study. Item analysis of the 108 pretest responses indicated that only items 4 and 17 had low correlation, relative ease, and low discrimination. These items were retained, however, since the overall Cronbach's alpha level was 0.8277 and because the small sample size could have caused sampling error. Table I presents these results. The researcher determined that the instrument was appropriate for this population and therefore continued with the study as planned.

The testing procedure was changed from group techniques (as administered in the Primary Grades Health Curriculum Project) to individual administration for the preschool children. Each child was read a statement, shown three pictures, and asked to point to the picture that corresponded to the given statement. The statement was repeated while the child looked at the pictures. Responses were recorded on a separate score sheet to prevent distraction of the child. Upon completion of the test, the score sheets were reviewed and each child was assigned a score based on the number of correct responses.

Data Analysis

Only data collected on those subjects which had completed both the pre and post examination were utilized. The sample included 73 experimental subjects and 35 control subjects for a total of 108. Each subject's pretest score and posttest score was matched and a new score, the pretest/posttest difference, was assigned. A t-test was selected to determine the impact upon health knowledge since nominal level data was used. Findings revealed a significant difference between the experimental and control groups regarding health knowledge change upon completion of the curriculum. (Table II)

TABLE I

ITEM ANALYSIS

Item	R(total)	Difficulty	Discrimination
1	0.5859	.68	.69
2	0.5492	.78	.59
3	0.4549	.69	.56
4	0.1959	.73	.18
5	0.3675	.73	.41
6	0.4548	.76	.50
7	0.5455	.61	.69
8	0.5025	.49	.68
9	0.4894	.54	.62
10	0.3724	.72	.44
11	0.2669	.31	.21
12	0.2805	.81	.25
13	0.2020	.71	.12
14	0.4704	.70	.53
16	0.4667	.61	.62
17	0.0769	.86	.10
18	0.2714	.47	.24
19	0.4239	.52	.55
20	0.3454	.49	.46
21	0.4268	.81	.41
22	0.5046	.69	.56
23	0.4100	.75	.34
24	0.3316	.62	.43
25	0.4344	.86	.34
26	0.4290	.66	.53
27	0.5180	.34	.63
28	0.4133	.63	.40
29	0.4488	.78	.41
30	0.4705	.76	.44

Cronbach's alpha = 0.8277

SUMMARY AND CONCLUSIONS

It appears, based on data analysis, that the picture identification instrument is reliable for this Head Start population. This finding supports Ball's theory that a picture-identification instrument is appropriate for evaluation of the preschool age child (Ball, 1971). Also, based on observations by the researcher, the picture identification instrument is practical for this age group. This supports the finding by Jubb (1982)

The second major finding is that the health education curriculum Hale and Hardy's Helpful Health Hints appears to favorably affect the health knowledge of Head Start children in this study. There is a need for replication of the study in other locations. Also, evaluation procedures regarding other aspects of the curriculum are currently being conducted. It is encouraging to see favorable results since a comprehensive health education guide for preschool programs is desparately needed. It is never too early to begin educating children toward healthy lifestyles in a manner that is both integrated with other developmental learning, and enjoyable for the child and teacher.

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November 12, 1984

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Dear Ms. Butler:

Thank you for sending the information on ERIC. Enclosed is a manuscript entitled "Determination of Health Knowledge: A Design for Preschool. I appreciate your consideration of this document for publication.

Respectfully submitted,

Charlotte M. Hendricks

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enclosures

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